CLAIMS

1. A method for tracking an object, comprising:

producing energy fields at a plurality of different frequencies in a vicinity of the object;

receiving signals that are generated at a location of the object at the different frequencies in response to the energy fields;

making multiple computations of spatial coordinates of the object based on the signals received at the different frequencies; and

ascertaining whether the energy fields have been perturbed by an article in the vicinity of the object by testing a convergence of the computations.

2. The method according to claim 1, wherein producing the energy fields comprises producing magnetic fields, and wherein receiving the signals comprises receiving electrical signals which are generated responsively to the magnetic fields.

3. The method according to claim 2, wherein producing the magnetic fields comprises driving multiple radiator coils with electrical currents at the different frequencies so as to generate the magnetic fields.

4. The method according to claim 3, wherein driving the multiple radiator coils comprises driving each of the coils to generate the magnetic fields at a unique, respective set of the frequencies.

5. The method according to claim 3, wherein receiving the electrical signals comprises receiving the electrical signals from one or more sensor coils that are fixed to the object.

6. The method according to claim 1, wherein producing the energy fields comprises scanning sequentially through a predetermined sequence of the frequencies.

7. The method according to claim 1, wherein producing the energy fields comprises generating the fields simultaneously at the different frequencies.

8. The method according to claim 1, wherein making the multiple computations comprises solving a set of simultaneous equations relating the received signals to the spatial coordinates of the object.

9. The method according to claim 1, wherein making the multiple computations comprises applying an iterative method of approximation to determine the spatial coordinates, and wherein testing the convergence comprises evaluating a convergence criterion of the iterative method.

10. The method according to claim 1, wherein testing the convergence comprises detecting a discrepancy between the spatial coordinates computed at the different frequencies.

11. The method according to claim 1, and comprising, upon ascertaining that the energy fields have been perturbed, correcting the computations to compensate for a presence of the article in the vicinity of the object.

12. Apparatus for tracking an object, comprising:

at least one radiator, which is adapted to produce energy fields at a plurality of different frequencies in a vicinity of the object;

at least one sensor, fixed to the object, which is adapted to generate signals in response to the energy fields at the different frequencies; and

a system controller, which is adapted to make multiple computations of spatial coordinates of the object based on the signals generated at the different frequencies, and to ascertain whether the energy fields have been perturbed by an article in the vicinity of the object by testing a convergence of the computations.

13. The apparatus according to claim 12, wherein the energy fields comprise magnetic fields, and wherein the signals comprise electrical signals which are generated by the at least one sensor responsively to the magnetic fields.

14. The apparatus according to claim 13, wherein the at least one radiator comprises multiple radiator coils and driving circuitry, which is adapted to drive the

radiator coils with electrical currents at the different frequencies so as to generate the magnetic fields.

15. The apparatus according to claim 14, wherein the driving circuitry is adapted to drive each of the coils to generate the magnetic fields at a unique, respective sequence of the frequencies.

16. The apparatus according to claim 14, wherein the at least one sensor comprises one or more sensor coils.

17. The apparatus according to claim 12, wherein the at least one radiator is adapted to generate the energy fields sequentially with a predetermined sequence of the frequencies.

18. The apparatus according to claim 12, wherein the at least one radiator is adapted to generate the fields simultaneously at the different frequencies.

19. The apparatus according to claim 12, wherein the system controller is adapted to compute the spatial coordinates by solving a set of simultaneous equations relating the received signals to the spatial coordinates of the object.

20. The apparatus according to claim 12, wherein the system controller is adapted to compute the spatial coordinates by applying an iterative method of approximation, and to test the convergence of the computation by evaluating a convergence criterion of the iterative method.

21. The apparatus according to claim 12, wherein the system controller is adapted to test the convergence by detecting a discrepancy between the spatial coordinates computed at the different frequencies.

22. The apparatus according to claim 12, wherein the system controller is adapted, upon ascertaining that the energy fields have been perturbed, to correct the computations to compensate for a presence of the article in the vicinity of the object.